



LOWER MINNESOTA RIVER WATERSHED DISTRICT

Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting

Wednesday, April 21, 2021

Agenda Item

Item 5. B. - Authorize 2021 Cost Share Project for 11451 Landing Road, Eden Prairie

Prepared By

Linda Loomis, Administrator

Summary

The LMRWD received an application for a cost share project at 11451 Landing Road in Eden Prairie. The homeowner plans to clear a large portion of the property of buckthorn, honeysuckle, garlic mustard and other invasive species and plant native understory trees. This property is steeply sloped and topography maps have been included.

The home has several roof drains that have caused erosion of the slope at the outfalls of the drains. In addition, much of the slope is vegetated with buckthorn and honeysuckle (also an invasive). The previous homeowner used wood mulch in these areas, which has been washing away down the slope. The areas where the roof drains outfall receives enough sunlight to allow for deep-rooted plants to be planted. The homeowner has worked with a landscaper, Ed's Buckthorn Control, to plan for these areas to be planted with native species that will attract pollinators. This property is adjacent to the Minnesota River floodplain.

This project will diffuse water coming from the roof drains by planting deep-rooted native species in the roof drain outfall areas. It will remove invasive species on the steep slope and establish native understory trees and shrubs to reduce erosion.

There is a wetland at the bottom of the steep slope and a city trail is adjacent to the property. The homeowner has approved placement of signage acknowledging the LMRWD.

Attachments

Proof of ownership/location map

2021 Cost Share Application

Quote from Ed's Buckthorn Control

2021 Cost Share worksheet

Wildflower planting plan

2 maps of property with 2' contour lines

Overhead of home with roof square footage

Overhead planting plan

City of Eden Prairie permit application (includes overhead showing project area and seed mix lists)

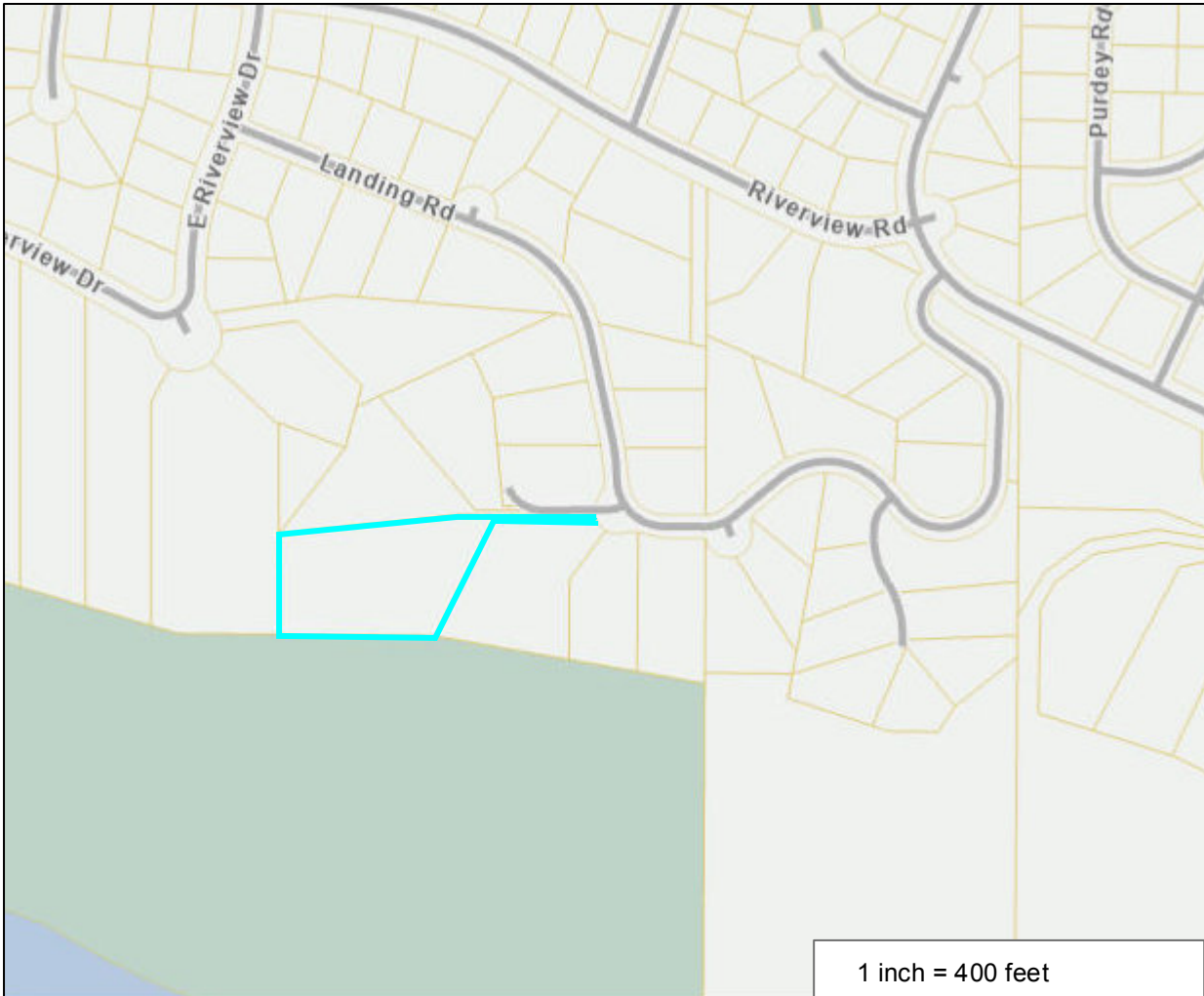
Recommended Action

Motion to authorize 2021 Cost Share Incentive and Water Quality Restoration Program application for 11451 Landing Road, Eden Prairie.



Hennepin County Property Map

Date: 4/16/2021



PARCEL ID: 3511622410019

OWNER NAME: M R Sarazine & D Sarazine

PARCEL ADDRESS: 11451 Landing Rd, Eden Prairie MN 55347

PARCEL AREA: 2.23 acres, 97,096 sq ft

A-T-B: Torrens

SALE PRICE: \$920,000

SALE DATA: 03/2017

SALE CODE: Warranty Deed

ASSESSED 2020, PAYABLE 2021

PROPERTY TYPE: Residential

HOMESTEAD: Homestead

MARKET VALUE: \$968,400

TAX TOTAL: \$12,864.94

ASSESSED 2021, PAYABLE 2022

PROPERTY TYPE: Residential

HOMESTEAD: Homestead

MARKET VALUE: \$997,500

Comments:

This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

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Cost share grant application 2021

Application type (check one) Homeowner

Non-profit - 501(c)(3)

School

Business or corporation

Public agency or local government unit

Project type (check all that apply) Raingarden

Vegetated Swale

Infiltration Basin

Wetland restoration

Lake/creek/wetland buffer

Conservation practice

Shoreline/bank stabilization Pervious hard surface

Other: Terrestrial invasive plant removal both upland and wetland border, native habitat reconstruction

Applicant Information

Name of Organization or Individual Applying for Grant (to be named as Grantee):

Delina Sarazine

Address (street, city and ZIP code):

11451 Landing Rd Eden Prairie, MN 55347

Phone: 651-295-4936

Email address: delina216@hotmail.com

Primary Contact (if different from above)

Name of Organization or Individual Applying for Grant (to be named as Grantee):

Address (street, city and ZIP code):

Phone: Email address:

Project location

Address (street, city and ZIP code):

11451 Landing Rd Eden Prairie, MN 55347

Property Identification Number (PID)

3511622410019

Property Owners:

Delina & Michael Sarazine

Project Summary

Title Sarazine Habitat Restoration Total Project Cost \$6,357.04 Grant amount requested \$2,500 (or higher if allowed) Estimated start date Spring 2021 (or ASAP) Estimated completion date Fall 2021 Is project tributary to a water body? No, water remains on site Yes, indirectly Yes, directly adjacent

Project description:

Our land is directly adjacent to the Minnesota River's floodplain, and has several problems which contribute to low quality of the River: erosion on steep sandy slopes, invasive plant species (upland and wetland edge), and lack of native understory and groundcover plants due to buckthorn's bullying traits. We propose to improve the quality of the Minnesota River by: 1. stabilizing the slopes with "wind rows" of brush in order to cause water runoff to slow down, spread out, and sink in 2. removing invasive plants such as garlic mustard and common & glossy buckthorn, to allow a diverse native plant community (especially groundcover species) to reestablish where there is currently bare soil 3. Install native plant plugs, seeds, shrubs, and trees to provide habitat for our pollinators and promote a cohesive ecosystem. 4. Maintain plantings, manage new invasive species that come up from seed, replace plants that fail, and maintain slope stabilization.

Is this work required as part of a permit? No Yes

(If yes; describe how the project provides water quality treatment beyond permit requirement on a separate page.)

Project Details

Checklist To be considered complete the following must be included with the application.

- | | | | |
|-------------------------------------|-----------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | location map | <input checked="" type="checkbox"/> | project timeline |
| <input checked="" type="checkbox"/> | site plan & design schematic | <input checked="" type="checkbox"/> | proof of property ownership |
| <input checked="" type="checkbox"/> | itemized budget or contractor bid | <input checked="" type="checkbox"/> | plant list & planting plan (if project includes plants) |

Description

Describe the current site conditions, as well as site history, and past management

Currently, the parcel consists of a pond, which flows to the proposed work area via a culvert. After leaving the culvert, water has eroded trenches on its way to the MN River. By viewing past maps, we can see that the area was previously a transition between prairie and Oak woodland/savannah. After nearby settlement and fire suppression, new species were able to establish and change the ecosystem. After development, invasive species moved in, and have been ousting the native plants and severely decreasing diversity, and runoff from impervious surfaces has been funneled, which erodes trenches of soil. Furthermore, buckthorn is known to create bare soil, which accelerated erosion. Last year, we removed invasive species and installed native seed around the pond, so this project is the logical next step, working downstream.

What are the project objectives and expected outcomes? Give any additional project details.

If the invasive plants are allowed to keep going unchecked, there will not be any new native trees to take the place of their parents when they eventually fall. Monocultures of buckthorn create bare soil, which causes erosion to

quicken. Runoff from the house travels down the steep slope full of buckthorn, and into the drainage wetland before flowing directly into the Minnesota River.

Our goals are to remove invasive species, introduce native species that will not only reduce erosion and improve habitat for pollinators and birds, but also fend off invasive seedlings and future invasions. Diversity is key to holding soil on slopes, so we will plant and seed diverse native species with diverse root system types to prevent future erosion. The slope along the drainage wetland edge will be planted with willows and dogwoods to further bolster the soil and provide habitat for pollinators and birds.

Roof runoff will be managed with a pseudo-rain garden. Most of the roof runoff is combined via French drain to one pipe, so there is a lot of water moving in a concentrated area. The slope is too steep for a rain garden basin unless a retaining wall is installed, so we will plant plugs on the slope in the same design arrangement as a rain garden with tiers like stairs to help make the water slow down, spread out, and sink in, rather than run off and cause erosion.

List other key participants and their roles (provide contact information for each partner and his/her expected contribution to the project)

Ed's Buckthorn Control is hired for design, implementation, and some early maintenance.

Which cost share goals does the project support? (check all that apply)

improve watershed resources Foster water resource stewardship

increase awareness of the vulnerability of watershed resources

increase familiarity with and acceptance of solutions to improve

waters How does the project support the goals you checked?

The project will improve water contributing to the Minnesota River by reducing erosion, sediment and filtering roof runoff. The project will also serve as an example to my community (there is a city owned path frequented by residents that cuts through our property to access the preserve area of Minnesota River and also is used by many within our association). Our direct neighbors are eager to promote healthier landscapes within their own yards and many others in our association that have property adjacent to the preserve area. I am part of a MN Gardener's group on Facebook and also a member of our associations' Facebook group, I already have discussed previous experiences in promoting other areas of our properties with these groups. I will be taking before and after photos of this project and plan to share its progress, our experiences with our community and what we have learned to continue to encourage residents to foster water resource stewardships as well.

Project Details (continued)

Benefits Estimate the project benefits in terms of restoration and/or **annual** pollution reduction. If you are working with a designer or contractor, they can provide these numbers. If you need help contact the district Administrator.

Our roof is about 3900 square feet and the land to be restored in this project is around 7500 square feet where buckthorn will be removed and replaced with native plants. This project will provide a more natural landscape to collect rainwater, diffuse it and allow for infiltration where it falls. *Per discussion with administrator it is

appropriate to leave fields in table below blank since statement above provides square footage and therefore should be sufficient.

Benefit	Amount
Water captures	gal/year
Water infiltrated	gal/year
Phosphorus removed	lbs/year
Sediment removed	lbs/year
Land restored	7,500 sq. ft.

How will you share the project results with your community?

As mentioned in the project goals section, I plan to share the project before and after results with my association and fellow gardener community via groups I am part of on Facebook. Our property is frequented by many within our city/association due to a public path that cuts through our property. The path will direct this 'traffic' right by our project area and I am very excited for these members of our community to see the results first hand over time as the native seeds/plants continue to outcompete the invasive plants that have bombarded this area prior to us living in our home.

Are there other projects that could be initiated as a result of this one?

Yes, The next area to remediate is the dry prairie uphill of the driveway. It has struggled because of the invasion of red cedar, and has invasive species. Ed's Buckthorn Control will be observing this year to determine impairment and goals.

Evaluation

How will the project be monitored and evaluated?

Ed's Buckthorn Control will monitor the project for invasive species, success of plantings, plant cages, and slope stabilization, and water flow. I will also observe water movement from the pipes to make sure these interventions remain in place and maintain their functionality. If these interventions become compromised, I will report to Ed's buckthorn control to fix (or have them give me instruction on how to fix myself if applicable). I will also take photos monthly during the growing season from the same perspectives, to show progress of the project, and follow the reporting guidelines outlined by the LMRWD.

Maintenance agreement

I acknowledge that receipt of a grant is contingent upon agreeing to maintain the project for the number of years outlined in the cost share guidelines. Yes

Authorization

Name of landowner or responsible party_


Signature_

4/5/2021
Date_

Type or handwrite your answers on this form. Attached additional pages as needed

(For questions, contact Linda Loomis at Naiad Consulting@gmail.com or call 763-545-4659.) Mail the completed application to: or Email to:

Administrator
Administrator
Chaska, MN 55318

c/o

Linda

Loomis,

naiadconsulting@gmail.com 112 E. Fifth St., Suite 102



14702 Excelsior Boulevard | #1245 | Minnetonka, Minnesota 55345
 6125645771 | info@edsbuckthorn.com | edsbuckthorncontrol.com

RECIPIENT:

Delina Sarazine

11451 Landing Road
 Eden Prairie, Minnesota 55347

SERVICE ADDRESS:

11451 Landing Road
 Eden Prairie, Minnesota 55347

Quote #64	
Sent on	Aug 20, 2020
Total	\$5,980.70

PRODUCT / SERVICE	DESCRIPTION	QTY.	UNIT COST	TOTAL
Buckthorn Control	Spring 2021: Cut and stump treat buckthorn greater than 3 feet tall. Use some to stabilize slopes. Haul rest of brush to curb for removal.	1	\$1,600.00	\$1,600.00
Brush Removal	Spring 2021: Haul away brush for responsible disposal, usually either burned by the power plant for electricity or burned by a local greenhouse for heat!	1	\$500.00	\$500.00
Spot Spray Weeds	Spring 2021: Spot spray for garlic mustard, motherwort, burdock, and other invasive/pesky weeds. Backpack sprayer with wand for precise application. Wetland-approved herbicide included. Workers are experts at identifying our target species and licensed herbicide applicators.	1	\$350.00	\$350.00
Planting Shrubs/Trees	Spring/Fall 2021: Labor cost for design, species selection, layout, installation, guarding, labeling, and watering. Price per 20 shrubs/trees	1	\$500.00	\$500.00*
Shrubs/Trees #2 Pot Pot Size. Priced per 20.	Spring/Fall 2021: Native flowering shrubs/trees, #2 pot size. Price per 20 shrubs	1	\$500.00	\$500.00*
Wire Fencing	Spring/Fall 2021: 4 foot tall welded wire fencing to deter rodents and deer from destroying planted shrubs/trees. Shipping and stakes included. Price per 20 shrubs' worth = 200 feet.	1	\$300.00	\$300.00*
Bare root Shrub/Tree seedlings	Spring/Fall 2021: Bare root seedlings/live stakes per 20	1	\$100.00	\$100.00*
Seeding Labor	Spring/Fall 2021: Labor for site prep to maximize seed to soil contact and germination, seed dispersal, and application of seed blankets. Price per ~5,000 square feet	1	\$500.00	\$500.00*
Seed - Native Pollinator Mix	Spring/Fall 2021: Native pollinator-friendly wildflower seed mix with grasses. near the hot tub and screened porch. Local genotype for best possible outcome. Price per 150 square feet.	1	\$50.00	\$50.00*



14702 Excelsior Boulevard | #1245 | Minnetonka, Minnesota 55345
 6125645771 | info@edsbuckthorn.com | edsbuckthorncontrol.com

PRODUCT / SERVICE	DESCRIPTION	QTY.	UNIT COST	TOTAL
Seed - Woodland Mix	Spring/Fall 2021: Shady woodland native plant mix - about 20 wildflowers, plus grasses and sedges. price per 5,000 square feet.	1	\$460.00	\$460.00*
Plugs	Spring/Fall 2021: Native plant plugs - per tray of 36. Delivery included.	6	\$60.00	\$360.00*
Plant plugs	Spring/Fall 2021: Layout and planting labor.	1	\$200.00	\$200.00*
Buckthorn Maintenance - Foliar Herbicide Application	Late Fall 2021: Once native plants are dormant, apply herbicide to control smallest buckthorn, and garlic mustard, along with other noxious invasive plants that are still susceptible to herbicide this time of year. Backpack sprayer with wand for precise application. Wetland-approved herbicide included. Workers are experts at identifying our target species and licensed herbicide applicators.	1	\$350.00	\$350.00

* Non-taxable

Delina,

We guarantee no buckthorn will re-sprout from the stumps we cut and treat with our wick dauber method, or we will treat them again for no additional cost.

Please share your thoughts and questions as they arise.

Thanks!
Ed

This quote is valid for the next 30 days, after which values may be subject to change.

Subtotal	\$5,770.00
Minnesota, 80004 District (0.5%)	\$14.00
Minnesota, Hennepin County (0.15%)	\$4.20
Minnesota State (6.875%)	\$192.50



14702 Excelsior Boulevard | #1245 | Minnetonka, Minnesota 55345
6125645771 | info@edsbuckthorn.com | edsbuckthorncontrol.com

Total

\$5,980.70

2021 Cost Share Worksheet

Labor Costs (Contractors, Consultants, In-Kind Labor)

Service Provider	Task	# Hours	Rate/Hour	Requested Funds from LMRWD	Matching/In-Kind Funds	Total
Ed's Buckthorn Control	Buckthorn control			\$ 800.00	\$ 800.00	\$ 1,600.00
	Brush removal			\$ 250.00	\$ 250.00	\$ 500.00
	Spot spray weeds			\$ 175.00	\$ 175.00	\$ 350.00
	Planting shrubs/trees			\$ 250.00	\$ 250.00	\$ 500.00
	Seeding labor			\$ 250.00	\$ 250.00	\$ 500.00
	Buckthorn maintenance			\$ -	\$ 350.00	\$ 350.00
Total:				\$ 1,725.00	\$ 2,075.00	\$ 3,800.00

Project Materials

Material description	Unit Cost	Total # of Units	Requested funds from LMRWD	Matching/In-Kind Funds	Total
Shrubs/trees #2 pots			\$ 250.00	\$ 250.00	\$ 500.00
Wire fencing (to protect trees, shrubs and seedlings from deer)			\$ 40.00	\$ 260.00	\$ 300.00
Bare root shrub/tree seedlings			\$ 50.00	\$ 50.00	\$ 100.00
Seed - Native pollinator mix			\$ 25.00	\$ 25.00	\$ 50.00
Seed - Woodland mix			\$ 230.00	\$ 230.00	\$ 460.00
Plugs			\$ 180.00	\$ 180.00	\$ 360.00
Plant plugs			\$ -	\$ 200.00	\$ 200.00
Sales taxes				\$ 210.70	\$ 210.70
Total:			\$ 775.00	\$ 1,405.70	\$ 2,180.70

Total Requested Funds from LMRWD*:	\$ 2,500.00 (A)
Total Matchin/In-Kind Funds:	\$ 3,480.70 (B)
Project Total:	\$ 5,980.70 (C)

*Please note: total requested funds (A) cannot be more than 50% of the Project Total (C)

SAPAZINE

DOWN HILL
S



220 SF



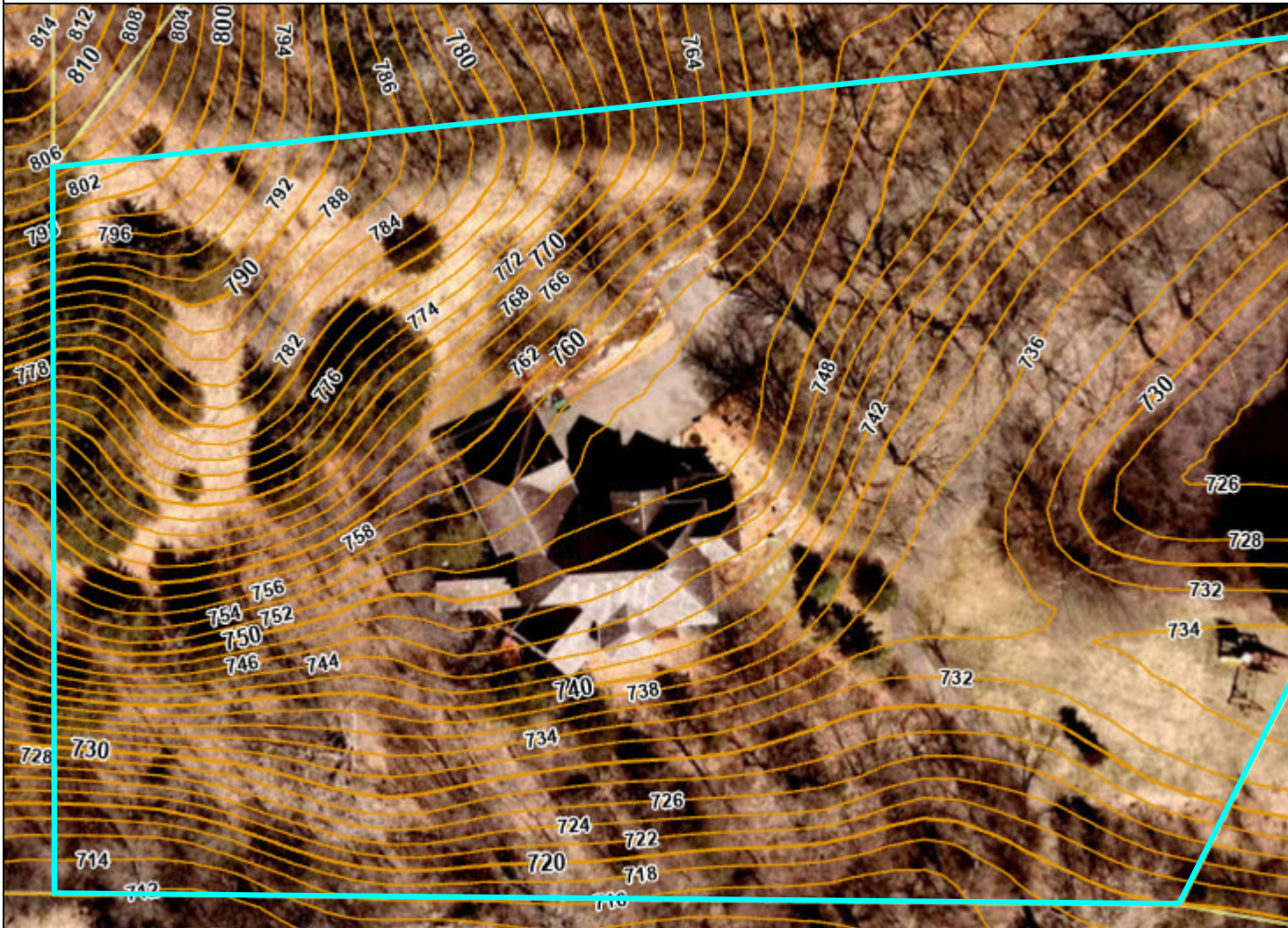
Hennepin County Natural Resources Map

Date: 4/16/2021

Legend

2 Foot Elevation Contours

- Index
- Intermediate



PID: 3511622410019
 Address: 11451 LANDING RD,
 EDEN PRAIRIE
 Owner Name: M R SARAZINE
 & D SARAZINE
 Acres: 2.23

Comments:

1 inch = 50 feet



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Hennepin County Natural Resources Map

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Measure



Sq Feet ▾

Measurement Result

3,910.9 Sq Feet

Disclaimer: Results not survey-grade

Select a year None ▾

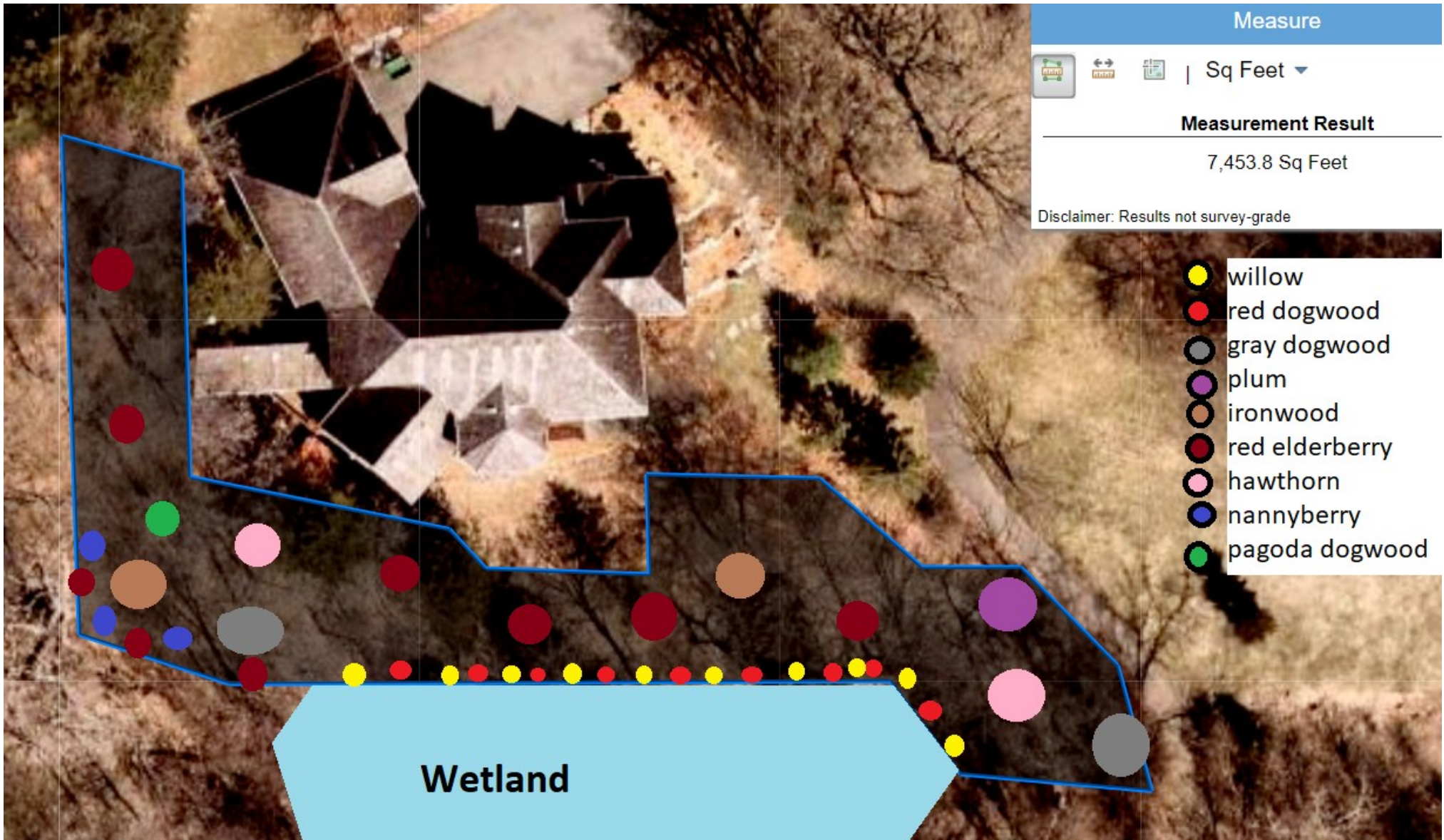


Hybrid
Basemap

Imagery

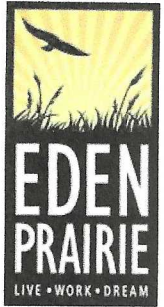
Map layers ?

- House Number
- Parcel Annotation
- Survey Monuments
- Survey Grid
- Abstract/Torrens/Both
- Market Value Asmt Yr 2020
- Market Value Asmt Yr 2021
- Recently Sold
- Surveyed Properties



APPLICATION FOR PERMIT

Vegetation Management Plan Application



Send Completed Application To: Leslie Stovring, Water Resources Coordinator 8080 Mitchell Road Eden Prairie, MN 55344 Phone: 952-949-8327 / Fax: 952-949-8326 Email: lstovring@edenprairie.org	FOR OFFICE USE ONLY Approval: <u>LAS</u> Date: <u>March 3, 2021</u> Revised 4/2/2021 Expiration Date: <u>December 31, 2021</u>
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Project Location / Address: 11451 Landing Road Eden Prairie MN 55347		
Property Owner: Michael & Delina Sarazine	Tel. No. / Email Address 651-295-4936 delina216@hotmail.com	Address 11451 Landing Road Eden Prairie MN 55347
Applicant (if not the same): Delina Sarazine	Tel. No. / Email Address "	Address "
Association Contact (if applicable):	Tel. No. / Email Address	Address
Contractor / Person Performing Work: Ed's Buckthorn Control	Tel. No. / Email Address (612) 564-5771	Address 14702 Excelsior Blvd #1245 Minnetonka MN 55345
Project Description (include a map of proposed project area): Cut & Stump treat all Buckthorn & other Invasive Species (see Below) within Project Area (see attached Project Area Diagram outlined in Blue)		
Species to be Removed (including approx. number of each): Common Buckthorn (30) Tatarian Honeysuckle (30), Glossy Buckthorn (30), garlic Mustard (100+)		
Due to proximity to water, a water-safe approved herbicide is required, such as Rodeo		
Type of Herbicide(s) proposed (if applicable) including Application Methods, Rates and Locations: Stump Treatment with Wick dawner 22.2% Triclopyr 3a Workers are Licensed Herbicide Applicators		
Vegetation Marking Plan (Please provide details on your plan to mark vegetation proposed for removal): All Employees are Highly Trained to Identify & Remove Only Target Species while Being Gentle to Native Species *Ribbon Flags Used*		
Species to be Seeded and/or Planted: Expecting extensive Natural Regeneration with Native plant Seeding distributed throughout the Project area (see attached seed mix lists)		
Property Restrictions Present (conservation easement, drainage easement, shoreland zone, steep slopes, etc.): N/A City Property / Steep Slopes - Okay to cross onto city property for buckthorn removal		
Proposed Start Date: Late March Early April 2021 Exact Date dependant on Cost Share Grant with LM RWD	Proposed Completion Date: May/June 2021 Removal of Invasive Species (Phase 1) Seeding Distribution (Phase 2) again exact Dates are Dependent on LM RWD	

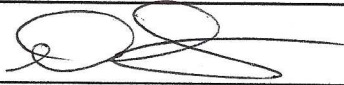
Before work commences, call 952-949-8327 to arrange appointments for inspections before, during and after work.

PERMIT REQUIREMENTS

- Evaluate City Codes Sections 9.01 (Storage, Deposit and Collection of Refuse, Yard Waste, Recyclable Waste and Solid Waste) and 9.71 (Maintenance of Vegetation), prior to authorization of the proposed activities.
- Submit a Vegetation Management Plan (Plan) for review and approval with this Application. The Plan must include a property survey or diagram showing the location of vegetation to be removed, vegetation to be planted, and temporary storage areas. Conservation easements, city property or shoreland protection areas must be included on the diagram. Photographs of the project area must be provided with the Plan. Projects that go beyond one year in length must include a Plan prepared by a professional landscape firm that provides all required information.
- **Include** planting and/or seeding methods; schedule; types and sizes of replacement plants; seed mix proposed for disturbed areas; watering plan; types and methods of application for herbicide; marking plan for indicating unwanted plants to be removed; method of disposal for vegetation removed; and any other information required by the City to determine that all project needs are met.
- Contact the city after the marking is complete and before work begins to ensure all marking is accurate and meets the requirements of work in protected areas.
- **Schedule an onsite evaluation with the City Forester prior to starting work.** A qualified arborist or native plant specialist must identify and mark vegetation proposed for removal prior to the final City inspection.
- Keep a copy of the approved Plan on the job site at all times. The approved permit must be exhibited upon request.
- Protect all existing utility installations.
- Notify the City that the work is completed and ready for final inspection within 24 hours of completion of the work authorized in this permit.
- Keep public streets, trails or sidewalks free of mud, dirt, dust, yard waste, debris, etc.
- ***No power equipment use allowed on City property, including chain saws, string trimmers, lawn mowers, etc. without prior written approval from the City. A "Volunteer Waiver" will also be required.***
- The information on this Application may be distributed to neighboring property owners by the City for comment prior to approval of the Application.

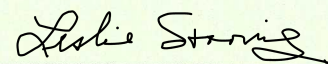
As owner(s) and/or applicant(s) at the above address we hereby request to alter the plant composition at the location listed above. As owner(s) and/or applicant(s) with a shoreland protection area, conservation easement, wetland and/or public water we understand the area abutting a natural area may be regulated by City Code and/or a conservation easement. Vegetation cutting, removal or addition is limited. It is expressly understood that this permit is conditioned on replacement or restoration of the work site to its original or better conditions. The Application must be approved by the City prior to commencing work.

I, We, the undersigned hereby accept the terms and conditions and regulations as set forth and agree to fully comply therewith to the City of Eden Prairie, Minnesota. Furthermore, the applicant or his agents or contractor shall assume all liability for, and save the City, its agents and employees, harmless from any and all claims for damages, actions or causes of action arising out of the work to be done herein and the continuing usage, constructing, reconstructing, maintaining and using of said obstruction under this application and/or permit.

Date: 3/2/2021 Owner/Applicant Name: Delina Sarazine
Owner/Applicant Signature: 

AUTHORIZATION OF PERMIT

In consideration of the agreement to comply in all respects with regulations of the City of Eden Prairie, MN covering such work, permission is hereby granted for the work to be done as described in the above application, said work to be done in accordance with special precautions as stated in City Code, including Sections 9.01, 9.06, 11.50 and 11.51.

Date: March 3, 2021 City (Signature): 
Title: Water Resources Coordinator





MNL Buckthorn Replacement Mix

8740 77th Street NE Otsego, MN 55362

Plant after buckthorn removal to restore native grasses and provide fuel for a prescribed burn. Height 2-4'

	Scientific Name	Common Name	% of Mix	Seeds/Sq Ft	PLS lbs/ac	Bloom Season
Grasses:	<i>Bouteloua curtipendula</i>	Side-Oats Grama	7.50	2.47	0.68	
	<i>Bromus pubescens</i>	Hairy Wood Chess	8.00	2.01	0.72	
	<i>Elymus canadensis</i>	Canada Wild Rye	6.00	1.03	0.54	
	<i>Elymus hystrix</i>	Bottlebrush Grass	15.00	3.77	1.35	
	<i>Elymus villosus</i>	Silky Wild Rye	20.00	3.64	1.80	
	<i>Elymus virginicus</i>	Virginia Wild Rye	25.00	3.47	2.25	
	<i>Panicum virgatum</i>	Switchgrass	4.00	1.85	0.36	
	<i>Schizachyrium scoparium</i>	Little Bluestem	7.50	3.72	0.68	
Sedges:	<i>Carex spengelii</i>	Long-Beaked Sedge	7.00	2.31	0.63	
			100.00	24.27	9.00	
Seeds/sq ft:	24.00					
Grass Species:	8					
Sedge Species:	1					



MNL Savanna Mix Shortgrass

8740 77th Street NE Otsego, MN 55362

Great mix for part-sun oak savanna and woodland edge sites
with 25-50% tree cover. Grass height 2-3'

	Scientific Name	Common Name	% of Mix	Seeds/ Sq Ft	PLS lbs/ac	Bloom Season
Grasses:	<i>Bouteloua curtipendula</i>	Side-Oats Grama	18.00	7.89	2.16	
	<i>Bromus kalmii</i>	Prairie Brome	4.00	1.41	0.48	
	<i>Elymus villosus</i>	Silky Wild Rye	9.00	2.18	1.08	
	<i>Elymus virginicus</i>	Virginia Wild Rye	15.00	2.78	1.80	
	<i>Koeleria macrantha</i>	Junegrass	0.25	1.93	0.03	
	<i>Schizachyrium scoparium</i>	Little Bluestem	17.00	11.24	2.04	
Sedges/Rushes:	<i>Carex bicknellii</i>	Bicknell's Sedge	2.75	2.06	0.33	
	<i>Carex normalis</i>	Greater Straw Sedge	5.00	5.51	0.60	
	<i>Carex radiata</i>	Eastern Star Sedge	3.00	5.42	0.36	
	<i>Carex sprengelii</i>	Long-Beaked Sedge	6.00	2.64	0.72	
Forbs:	<i>Achillea millefolium</i>	Yarrow	0.15	1.16	0.02	Summer
	<i>Agastache foeniculum</i>	Fragrant Giant Hyssop	0.35	1.39	0.04	Summer
	<i>Amorpha canescens</i>	Leadplant	0.50	0.35	0.06	Summer
	<i>Anemone canadensis</i>	Canada Anemone	0.25	0.09	0.03	Spring
	<i>Antennaria neglecta</i>	Field Pussytoes	0.15	2.73	0.02	Spring
	<i>Aquilegia canadensis</i>	Columbine	0.20	0.33	0.02	Spring
	<i>Asclepias syriaca</i>	Common Milkweed	1.25	0.22	0.15	Summer
	<i>Ceanothus americanus</i>	New Jersey Tea	0.50	0.17	0.06	Summer
	<i>Chamerion angustifolium</i>	Fireweed	0.10	2.20	0.01	Summer
	<i>Dalea purpurea</i>	Purple Prairie Clover	5.00	3.31	0.60	Summer
	<i>Desmodium canadense</i>	Canada Tick Trefoil	2.75	0.67	0.33	Summer
	<i>Lespedeza capitata</i>	Round-headed Bushclover	1.00	0.35	0.12	Summer
	<i>Liatris aspera</i>	Rough Blazing Star	0.20	0.14	0.02	Summer
	<i>Lupinus perennis</i>	Wild Lupine	0.50	0.02	0.06	Spring
	<i>Monarda fistulosa</i>	Wild Bergamot	0.60	1.85	0.07	Summer
	<i>Oenothera biennis</i>	Common Evening Primrose	0.70	2.78	0.08	Fall
	<i>Rosa arkansana</i>	Prairie Rose	0.25	0.01	0.03	Summer
	<i>Rudbeckia hirta</i>	Black Eyed Susan	1.25	5.07	0.15	Summer
	<i>Rudbeckia triloba</i>	Brown-Eyed Susan	1.00	1.50	0.12	Summer
	<i>Solidago nemoralis</i>	Gray Goldenrod	0.25	3.31	0.03	Fall
	<i>Solidago rigida</i>	Stiff Goldenrod	1.00	1.81	0.12	Fall
	<i>Symphotrichum lateriflorum</i>	Calico Aster	0.30	3.31	0.04	Fall
	<i>Symphotrichum oolentangiense</i>	Sky Blue Aster	0.35	1.23	0.04	Fall
	<i>Verbena stricta</i>	Hoary Vervain	0.75	0.93	0.09	Summer
	<i>Veronicastrum virginicum</i>	Culver's Root	0.15	5.29	0.02	Summer
	<i>Zizia aurea</i>	Golden Alexanders	0.50	0.24	0.06	Spring
			100.00	83.51	12.00	
Seeds/sq ft:	84.00					
Grass Species:	6					
Sedge/Rush Species:	4					
Forb Species:	26					

Seed mixes are subject to change based on availability



MNL Pollinator Mix Dry to Mesic Soils

8740 77th Street NE Otsego, MN 55362

Mix approved by the Xerces Society for Pollinator habitat enhancement and restoration.
For dry and well-drained to mesic soils. Height 2-3'

	Scientific Name	Common Name	% of Mix	Seeds/ Sq Ft	PLS lbs/ac	Bloom Season
Grasses:	<i>Bouteloua curtipendula</i>	Side-Oats Grama	16.75	6.12	1.68	
	<i>Bouteloua gracilis</i>	Blue Grama	4.00	5.88	0.40	
	<i>Bromus kalmii</i>	Prairie Brome	3.00	0.88	0.30	
	<i>Elymus trachycaulus</i>	Slender Wheat Grass	2.00	0.51	0.20	
	<i>Koeleria macrantha</i>	Junegrass	0.25	1.61	0.03	
	<i>Schizachyrium scoparium</i>	Little Bluestem	16.00	8.82	1.60	
	<i>Sporobolus heterolepis</i>	Prairie Dropseed	2.00	1.18	0.20	
Sedges/Rushes:	<i>Carex bicknellii</i>	Bicknell's Sedge	1.00	0.62	0.10	
Forbs:	<i>Achillea millefolium</i>	Yarrow	0.20	1.29	0.02	Summer
	<i>Agastache foeniculum</i>	Fragrant Giant Hyssop	0.60	1.98	0.06	Summer
	<i>Allium stellatum</i>	Prairie Onion	0.60	0.24	0.06	Summer
	<i>Amorpha canescens</i>	Leadplant	3.00	1.76	0.30	Summer
	<i>Anemone canadensis</i>	Canada Anemone	0.75	0.22	0.08	Spring
	<i>Asclepias speciosa</i>	Showy Milkweed	0.50	0.08	0.05	Summer
	<i>Asclepias syriaca</i>	Common Milkweed	1.75	0.26	0.18	Summer
	<i>Asclepias tuberosa</i>	Butterfly Milkweed	1.50	0.24	0.15	Summer
	<i>Astragalus canadensis</i>	Canada Milk Vetch	2.00	1.25	0.20	Summer
	<i>Chamaecrista fasciculata</i>	Partridge Pea	7.00	0.69	0.70	Fall
	<i>Coreopsis palmata</i>	Prairie Coreopsis	0.25	0.09	0.03	Summer
	<i>Dalea candida</i>	White Prairie Clover	5.00	3.49	0.50	Summer
	<i>Dalea purpurea</i>	Purple Prairie Clover	7.50	4.13	0.75	Summer
	<i>Desmodium canadense</i>	Canada Tick Trefoil	4.25	0.86	0.43	Summer
	<i>Echinacea angustifolia</i>	Narrow-leaved Coneflower	1.50	0.39	0.15	Summer
	<i>Heliopsis helianthoides</i>	Common Ox-Eye	4.00	0.93	0.40	Summer
	<i>Helianthus pauciflorus</i>	Stiff Sunflower	0.25	0.04	0.03	Fall
	<i>Lespedeza capitata</i>	Round-headed Bushclover	1.25	0.37	0.13	Summer
	<i>Liatris aspera</i>	Rough Blazing Star	0.50	0.29	0.05	Summer
	<i>Liatris punctata</i>	Dotted Blazing Star	1.00	0.26	0.10	Summer
	<i>Lupinus perennis</i>	Wild Lupine	0.75	0.03	0.08	Spring
	<i>Monarda fistulosa</i>	Wild Bergamot	0.60	1.54	0.06	Summer
	<i>Monarda punctata</i>	Spotted Bee Balm	0.15	0.50	0.02	Summer
	<i>Penstemon gracilis</i>	Slender Beardtongue	0.15	3.31	0.02	Spring
	<i>Penstemon grandiflorus</i>	Showy Penstemon	0.75	0.39	0.08	Spring
	<i>Phlox pilosa</i>	Prairie Phlox	0.10	0.07	0.01	Spring
	<i>Pycnanthemum virginianum</i>	Mountain Mint	0.20	1.62	0.02	Summer
	<i>Ratibida columnifera</i>	Long-Headed Coneflower	1.25	1.93	0.13	Summer
	<i>Rudbeckia hirta</i>	Black Eyed Susan	1.80	6.08	0.18	Summer
	<i>Solidago nemoralis</i>	Gray Goldenrod	0.15	1.65	0.02	Fall
	<i>Solidago speciosa</i>	Showy Goldenrod	0.25	0.87	0.03	Fall
	<i>Symphotrichum laeve</i>	Smooth Blue Aster	1.00	2.02	0.10	Fall
	<i>Symphotrichum oolentangiense</i>	Sky Blue Aster	1.55	4.55	0.16	Fall
	<i>Tradescantia bracteata</i>	Prairie Spiderwort	0.50	0.18	0.05	Spring
	<i>Verbena stricta</i>	Hoary Vervain	1.50	1.54	0.15	Summer
	<i>Zizia aptera</i>	Heart-leaf Golden Alexanders	0.20	0.09	0.02	Spring
	<i>Zizia aurea</i>	Golden Alexanders	0.70	0.28	0.07	Spring
			100.00	71.12	10.00	

Seeds/sq ft: 71.00
 Grass Species: 7
 Sedges/Rush Sp: 1
 Forb Species: 37

Seed mixes are subject to change based on availability